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09/859,687	05/17/2001	Phillip N. Shea	10991539-1	5739

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EXAMINER	
SINGH, RAMNANDAN P	
ART UNIT	**PAPER NUMBER**
2646	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No. 09/859,687	Applicant(s) SHEA, PHILLIP N.	
	Examiner Ramnandan Singh	Art Unit 2646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-9,11-13,15-17 and 19-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-9,11-13,15-17 and 19-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on March 08, 2005 have been fully considered but they are not persuasive.

(i) Applicant's argument—"The training algorithm of Ahmadi discloses "starting with a random set of weights, applying a realistic set of inputs, determining an error by comparing the actual output to the desired outputs, and adjusting the weights according to the error." Ahmadi, Col. 11, lines 9-13. This process does not teach or suggest training an artificial neural network (ANN) to an ADSI standard" on page 6.

Examiner's response---Ahmadi teaches a standard (generic) method of training an ANN for operation in a new application environment. Training an ANN for an ADSI standard simply requires **selecting a realistic set of training input data representative of the ADSI standard environment**, and thereby repeating the above ANN standard training procedures of Ahmadi. In practice, initially, all numeric weights for connections between neurons, as well as any weighting of input signals , are randomly set to various values. This ANN standard training method of Ahmadi is further reconfirmed by Brooks et al [[US 5,222,193]; col. 1, lines 42-56; col. 39, lines 48-49; Figs. 1-2C; col. 5, line 39 to col. 7, line 5; col. 29, lines 5-21; Abstract]. As a result, the means and method for training a neural network for a new application environment including an ADSI standard environment is well-known to one of ordinary skill in the art.

(ii) Applicant's argument---"However, the Examiner has offered no reference or

other support that training an ANN (artificial neural network) is intrinsic, in and of itself. Thus, it would not necessarily be intrinsic to train an ANN for operation to a new application environment." On page 6.

Examiner's response---Examiner respectfully disagreed with the interpretation of the Office action. Examiner asserts that training an ANN is essential for operation in a new application environment. Whenever a new application environment comes in, the ANN **must** be trained to this new application environment. Therefore, the training requirement is intrinsic to an ANN for operating in a new application environment. However, the means and method for training a neural network in a new application environment is well-known to one of ordinary skill in the art [Brooks et al [US 5,222,193]; col. 39, lines 48-49; col. 1, lines 33-56; Figs. 1-2C; col. 5, line 39 to col. 7, line 5; col. 29, lines 5-21; Abstract]. In this context, an ADSI standard simply constitutes a new application environment for an ANN. As a result, one of ordinary skill in the art can train an ANN for any new application environment including the ADSI standard environment. This is a well-established common practice in the art.

(iii) Applicant's argument--- "In his rejections, the Examiner states that "[f]urther, the ANN can operate in any application environment provided the ANN is adequately trained to learn the desired operational environment using the training data set representative of the various conditions imposed on the performance of the ANN. Since training the ANN is **intrinsic to its operation in a new application** environment, such as **an ADSI environment,** a realistic set of inputs representative of the ADSI

environment is required to be selected by a trainer to train the ANN to detect call progress tones to an industry ADSI standard." Office action, page 5, paragraph 2. .... Alternatively, under M.P.E.P. § 2144.03, the Examiner is hereby requested to cite a reference in support of the assertion." On page 7.

Examiner's response—In response to the above, Examiner re-asserts that training an ANN is essential for operating the ANN in a new application environment. Whenever a new application environment comes in, the ANN **must** be re-trained to this new application environment. Therefore, the training requirement is intrinsic to an ANN for operating in a new application environment. However, the means and method for training a neural network in a new application environment is well-known to one of ordinary skill in the art [Brooks et al [US 5,222,193]; col. 39, lines 48-49; col. 1, lines 33-56; Figs. 1-2C; col. 5, line 39 to col. 7, line 5; col. 29, lines 5-21; Abstract]. In this context, an ADSI standard simply constitutes a new application environment for an ANN. As a result, one of ordinary skill in the art can train an ANN for any new application environment including the ADSI standard environment. This is a well-established common practice in the art.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitchin et al [US 5,319,702] in view of Alfred et al [US 5,894,504] and further in view of Ahmadi [EP 1093310 A2].

Regarding claim 1, Kitchin et al teach a method for determining the state of a telephony call shown in Fig. 1C, comprising:

providing a pattern matching subsystem (i.e. **neural network**) (860) [col. 6, lines 39-43]; and employing the neural network to determine DTMF and call progress tones (650) [col. 2, lines 39-54; col. 10, lines 3-46; col. 12, lines 7-9; col. 20, lines 27-37; col. 21, lines 21-27; col. 23, lines 34-39].

Although Kitchin et al teach detecting call progress tones, they do not teach expressly an advanced voice messaging system that includes automatic speech recognition.

Alfred et al teach a voice messaging system that includes an automatic speech recognition unit receiving speech signals associated with a message being recorded by a caller. The automatic speech recognition unit transcribes in real time the input speech signals into text data that is delivered to the called party for display on a screen using the Analog Display Services Interface (ADSI) protocol [Figs. 1-4; col. 2, lines 31-47; col. 3, lines 52-65; col. 6, line 51 to col. 7, line 2].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the messaging system of Alfred et al as an advanced calling feature with Kitchin et al in order to identify a calling party [Alfred et al; col. 1, lines 46-52; col. 2, lines 31-40].

Further, although Kitchin et al teach employing the artificial neural network (ANN) (860), they do not disclose expressly the details of the method of training the ANN. As a result, one of ordinary skill in the art would have been motivated to seek any known suitable training methods of the ANN to enable to the building of this invention, such as that of Ahmadi, as the needed method in Kitchin et al.

Ahmad teaches a method of training an artificial neural network (ANN) <u>with a realistic set of inputs,</u> wherein the training comprises adjusting one or more artificial neural network parameters (i.e. **weights)** until an error rate is at or below a predetermined error rate [col. 11, lines 6-17]. Ahmadi also teaches detecting signaling tones accurately in talk-off, cur-through, or both by maintaining low error rates [col. 1, lines 37-53]. Further, the ANN can operate in <u>any application environment</u> provided the ANN is <u>adequately</u> trained to learn the desired operational environment using the training data set representative of the various conditions imposed on the performance of the ANN. Since <u>training the ANN is **intrinsic to its operation in a new application** environment</u>, such as **an ADSI environment,** a realistic set of inputs representative of

the ADSI environment is required to be selected by a trainer to train the ANN to detect call progress tones to an industry ADSI standard

Kitchin et al, Alfred et al and Ahmadi are analogous art because they are from a similar problem solving area, viz. , DTMF and call progress tone detection in a telephone conversation.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the training method of the ANN of Ahmadi to an ADSI environment with the combined ADSI system of Kitchin et al and Alfred et al.

The suggestion/motivation for doing so would have been to provide **a trained neural network** to detect tones more quickly than conventional tone detection methods [Ahmadi; Abstract].

9. Claims 1, 3-5, 12-13, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennett et al [US 5,311,589] in view of Alfred et al [US 5,894,504] and further in view of Ahmadi [EP 1093310].

Regarding claim 1, Bennett et al teach expressly detecting DTMF tones as well as call progress tones by determining the amplitudes of pre-selected frequencies in a signal over a predetermined time period, and determining a candidate tone by selecting

two of the pre-selected frequencies with the highest amplitudes and comparing the two selected frequencies to known DTMF and call progress tone frequencies; wherein the DTMF digits are defined by the matrix of Table 1, and the call progress tones are defined by the matrix of Table 2, which are well-known in the art [col. 1 line 49 to col. 2, line 38; Abstract; col. 6, lines 10-20; col. 6, lines 36-59; col. 10, line 52 to col. 11, line 21].

Although Bennett et al teach detecting call progress tones, they do not teach expressly a voice messaging system including automatic speech recognition.

Alfred et al teach a voice messaging system that includes an automatic speech recognition unit receiving speech signals associated with a message being recorded by a caller. The automatic speech recognition unit transcribes in real time the input speech signals into text data that is delivered to the called party for display on a screen using the Analog Display Services Interface (ADSI) protocol [Figs. 1-4; col. 2, lines 31-47; col. 3, lines 52-65; col. 6, line 51 to col. 7, line 2].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the messaging system of Alfred et al as an advanced calling feature with Bennett et al in order to identify a calling party [Alfred et al; col. 1, lines 46-52; col. 2, lines 31-40].

Further the combined ADSI system of Bennett et al and Alfred et al does not teach employing an artificial network (ANN) and training the ANN to an ADSI environment.

Ahmad teaches an artificial neural network (ANN) for tone detection and training the ANN with a realistic set of inputs, wherein the training comprises adjusting one or more artificial neural network parameters (i.e. **weights)** until an error rate is at or below a predetermined error rate [col. 11, lines 6-17]. Ahmadi also teaches detecting signaling tones accurately in talk-off, cur-through, or both by maintaining low error rates [col. 1, lines 37-53]. Further, the ANN can operate in any application environment provided the ANN is adequately trained to learn the desired operational environment using the training data set representative of the various conditions imposed on the performance of the ANN. Since training the ANN is **intrinsic to its operation in a new application** environment , such as **an ADSI environment,** a realistic set of inputs representative of the ADSI environment is required to be selected by a trainer to train the ANN to detect call progress tones to an industry ADSI standard

Bennett et al, Alfred et al and Ahmadi are analogous art because they are from a similar problem solving area, viz., DTMF and call progress tone detection in a telephone conversation.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the neural network, and the method of the ANN of Ahmadi to an ADSI environment with the combined ADSI system of Bennett et al and Alfred et al.

The suggestion/motivation for doing so would have been to provide **a trained neural network** to detect tones more quickly than conventional tone detection methods [Ahmadi; Abstract].

Claim 12 is essentially similar to claim 1 except for providing one or more call options to a caller based on the determined state of the telephony call. Bennett et al teach various states of the call progress providing one or more call options, such as call waiting, busy, etc. [col. 2, lines 29-38 ; col. 11, lines 11-21 ; col. 13, line 55 to col. 14, line 8].

Regarding claim 13, Ahmadi teaches detecting signaling tones accurately in talk-off, cur-through, or both by maintaining low error rates [col. 1, lines 37-53].

Regarding claim 3, Bennett et al further teach various states of the call progress providing one or more call options, such as call waiting, busy, etc. [col. 2, lines 29-38 ; col. 11, lines 11-21 ; col. 13, line 55 to col. 14, line 8].

Regarding claims 4 and 5, Ahmadi teaches both hardware and software implementations [col. 9, lines 12-20; col. 12, lines 26-37].

Regarding claims 15 and 16, the limitations are shown above.

10. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable Kitchin et al [US5,319,702] in view of Alfred et al [US 5,894,504], and further in view of Li [US 6,549,587 B1] and further in view of Ahmadi [EP 1093310 A2].

Regarding claim 6, Kitchin et al teach a method for determining the state of a telephony call shown in Fig. 1C, comprising:

providing a pattern matching subsystem (i.e. **neural network**) (860) [col. 6, lines 39-43]; and employing the neural network to determine DTMF and call progress tones (650) [col. 2, lines 39-54; col. 10, lines 3-46; col. 12, lines 7-9; col. 20, lines 27-37; col. 21, lines 21-27; col. 23, lines 34-39].

Although Kitchin et al teach detecting call progress tones, they do not teach expressly an advanced voice messaging system that includes automatic speech recognition.

Alfred et al teach a voice messaging system that includes an automatic speech recognition unit receiving speech signals associated with a message being recorded by

a caller. The automatic speech recognition unit transcribes in real time the input speech signals into text data that is delivered to the called party for display on a screen using the Analog Display Services Interface (ADSI) protocol [Figs. 1-4; col. 2, lines 31-47; col. 3, lines 52-65; col. 6, line 51 to col. 7, line 2].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the messaging system of Alfred et al as an advanced calling feature with Kitchin et al in order to identify a calling party [Alfred et al; col. 1, lines 46-52; col. 2, lines 31-40].

Further, the combination of Kitchen et al and Alfred et al does not teach using a telephone network simulator to generate call progress tones for training purposes.
It is, however, well-known in the art that a telephone network simulator is used to generate call progress tones for training purposes.

Li teaches determining call progress tones [col. 37, lines 34-51], and determining loop filter parameters using a telephone network simulator [col. 67, line 58 to col. 68, line 65].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the telephone network simulator of Li with the combination of

Kitchen et al and Alfred et al to generate training inputs to train an operator for fast and accurate system operations.

Further, although Kitchin et al teach employing the artificial neural network (ANN) (860), they do not disclose expressly the details of the method of training the ANN. As a result, one of ordinary skill in the art would have been motivated to seek any known suitable training methods of the ANN to enable to the building of this invention, such as that of Ahmadi, as the needed method in Kitchin et al.

Ahmad teaches a method of training an artificial neural network (ANN) with a realistic set of inputs, wherein the training comprises adjusting one or more artificial neural network parameters (i.e. **weights)** until an error rate is at or below a predetermined error rate [col. 11, lines 6-17]. Ahmadi also teaches detecting signaling tones accurately in talk-off, cur-through, or both by maintaining low error rates [col. 1, lines 37-53]. Further, the ANN can operate in any application environment provided the ANN is adequately trained to learn the desired operational environment using the training data set representative of the various conditions imposed on the performance of the ANN. Since training the ANN is **intrinsic to its operation in a new application** environment , such as **an ADSI environment;** a realistic set of inputs representative of the ADSI environment is required to be selected by a trainer to train the ANN to detect call progress tones to an industry ADSI standard

Kitchin et al, Alfred et al, Li and Ahmadi are analogous art because they are from a similar problem solving area, viz., DTMF and call progress tone detection in a telephone conversation.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the training method of the ANN of Ahmadi to an ADSI environment with the combined ADSI system of Kitchin et al, Alfred et al and Li.

The suggestion/motivation for doing so would have been to provide **a trained neural network** to detect tones more quickly than conventional tone detection methods [Ahmadi; Abstract].

Regarding claim 8, the combination of Kitchin et al, Alfred et al, Li and Ahmadi further teaches the method for providing an ANN system wherein the ADSI is a new application environment and a test tape provides training data simulating a telephone conversation in this ADSI environment.

11. Claims 17, 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitchen et al [US 5,319,702] in view of Alfred et al [US 5,894,504] and further in view of Li [US 6,549,587 B1] and further in view of Ahmadi [EP 1093310 A2] and further in view of Moses et al [Us 5,532,950].

Regarding claim 17, Kitchin et al teach a method for determining the state of a telephony call shown in Fig. 1C, comprising:

providing a pattern matching subsystem (i.e. **neural network**) (860) [col. 6, lines 39-43]; and employing the neural network to determine DTMF and call progress tones (650) [col. 2, lines 39-54; col. 10, lines 3-46; col. 12, lines 7-9; col. 20, lines 27-37; col. 21, lines 21-27; col. 23, lines 34-39].

Although Kitchin et al teach detecting call progress tones, they do not teach expressly an advanced voice messaging system that includes automatic speech recognition.

Alfred et al teach a voice messaging system that includes an automatic speech recognition unit receiving speech signals associated with a message being recorded by a caller. The automatic speech recognition unit transcribes in real time the input speech signals into text data that is delivered to the called party for display on a screen using the Analog Display Services Interface (ADSI) protocol [Figs. 1-4; col. 2, lines 31-47; col. 3, lines 52-65; col. 6, line 51 to col. 7, line 2].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the messaging system of Alfred et al as an advanced calling feature with Kitchin et al in order to identify a calling party [Alfred et al; col. 1, lines 46-52; col. 2, lines 31-40].

Further, the combination of Kitchen et al and Alfred et al does not teach using a telephone network simulator to generate call progress tones for training purposes. It is, however, well-known in the art that a telephone network simulator is used to generate call progress tones for training purposes.

Li teaches determining call progress tones [col. 37, lines 34-51], and determining loop filter parameters using a telephone network simulator [col. 67, line 58 to col. 68, line 65].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the telephone network simulator of Li with the combination of Kitchen et al and Alfred et al to generate training inputs to train an operator for fast and accurate system operations.

Further, although Kitchin et al teach employing the artificial neural network (ANN) (860), they do not disclose expressly the details of the method of training the ANN. As a result, one of ordinary skill in the art would have been motivated to seek any known suitable training methods of the ANN to enable to the building of this invention, such as that of Ahmadi, as the needed method in Kitchin et al.

Ahmad teaches emplying an artificial network (ANN) for tone detection and a method of training the artificial neural network (ANN) with a realistic set of inputs, wherein the training comprises adjusting one or more artificial neural network parameters (i.e. **weights)** until an error rate is at or below a predetermined error rate [col. 11, lines 6-17]. Ahmadi also teaches detecting signaling tones accurately in talk-off, cur-through, or both by maintaining low error rates [col. 1, lines 37-53]. Further, the ANN can operate in any application environment provided the ANN is adequately trained to learn the desired operational environment using the training data set representative of the various conditions imposed on the performance of the ANN. Since training the ANN is **intrinsic to its operation in a new application** environment , such as **an ADSI environment;** a realistic set of inputs representative of the ADSI environment is required to be selected by a trainer to train the ANN to detect call progress tones to an industry ADSI standard

Kitchin et al, Alfred et al, Li and Ahmadi are analogous art because they are from a similar problem solving area, viz., DTMF and call progress tone detection in a telephone conversation.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the training method of the ANN of Ahmadi to an ADSI environment with the combined ADSI system of Kitchin et al, Alfred et al and Li to

enable the neural network of Kitchin et al and to use the telephone network simulator of Li to generate training inputs.

The suggestion/motivation for doing so would have been to provide **a trained neural network** to detect tones more quickly than conventional tone detection methods [Ahmadi; Abstract].

Further, the combination of Kitchin et al, Alfred et al and Li does not teach expressly a back-propagation algorithm to train a neural network as claimed. However, the back-propagation algorithm is a very well-known method for training an artificial neural network in the art.; and forms **an integral part** of the neural network system.

Moses et al teach applying a back-propagation algorithm to train an artificial neural network [col. 7, lines 57-67]. Fig. 5 presents a flowchart describing the steps used in training the neural network 26 [col. 8, lines 27-34].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the back-propagation technique of Moses et al to train the ANN of Ahmadi , and improve performance of the telephone network.

Regarding Claims 19-21, the limitations are shown above.

Regarding Claim 22, the hidden nodes are inherent features of an artificial neural network [Ahmadi; Fig. 6; col. 10, lines 45-51]. Further, Moses et al teach a learning rate factor and hidden nodes 32 [Fig. 3; col. 8, line 35 to col. 10, line 21].

12. Claims 7, 9, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Kitchin et al, Alfred et al, Ahmadi and Li as applied to claim 6 above, and further in view of Moses et al [Us 5,532,950].

Regarding Claim 7, the combination of Kitchin et al , Alfred et al, Ahmadi and Li does not teach expressly a back-propagation algorithm to train a neural network. However, the back-propagation algorithm is a very well-known method for training an artificial neural network in the art.; and forms **an integral part** of the neural network system.

Moses et al teaches applying a back-propagation algorithm to train an artificial neural network [col. 7, lines 57-67]. Fig. 5 presents a flowchart describing the steps used in training the neural network 26 [col. 8, lines 27-34].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the back-propagation technique of Moses et al to train the ANN of Ahmadi , and improve performance of the telephone network.

Regarding Claim 9, Moses et al teaches training the ANN using a back-propagation algorithm, as outline in Fig. 5, using different sample rates and a learning rate factor [col. 8, line 35 to col. 10, line 21].

Regarding Claim 11, the hidden nodes are inherent features of an artificial neural network [Ahmadi; Fig. 6; col. 10, lines 45-51]. Further, Moses et al teaches a learning rate factor and hidden nodes 32 [Fig. 3; col. 8, line 35 to col. 10, line 21].

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yoda teaches a self-organizing neural network for pattern classification [Whole document].

14. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ramnandan Singh
Examiner
Art Unit 2646

SINH TRAN
SUPERVISORY PATENT EXAMINER